Fall 2019

CMT 332-101: Structural Systems for Construction Managers

Paul McCall

COURSE NUMBER	CMT 332
COURSE NAME	Structural Systems for Construction Managers
COURSE STRUCTURE	(3-0-0) (lecture hr/wk - lab hr/wk – course credits)
COURSE DESCRIPTION	Study of the types and behavior of building structural systems using qualitative analysis techniques. Systems to be covered will include those involving structural steel, reinforced concrete, wood and timber, and plain and reinforced masonry. The effect of wind and seismic events on these systems is reviewed.
PREREQUISITE(S)	None
COREQUISITE(S)	None
REQUIRED, ELECTIVE OR SELECTED ELECTIVE	Required
REQUIRED MATERIALS	Statics and Strengths of Materials for Architecture and Building Construction Barry Onouye and Kevin Kane – Fourth Edition
COMPUTER USAGE	Internet
COURSE OUTCOMES (CO)	Student Learning Outcomes: **Introduction -** Students should be able to understand the process of structural design and the loads and functional requirements associated with the design process. **Statics -** Students will understand the principles of statics. **Analysis of Structural Systems -** Students will be able to solve an array of structural frameworks. **Load Tracing -** Students will be able to understand the interaction of one member with other members and the load paths that develop. **Strength of Materials - S**tudent will have an understanding of the concepts of stress and strain including material properties. **Cross-Sectional Properties of Structural Members -** Students will have a basic working knowledge of types of commonly used beams and columns. **Shear and Bending in Simple Beams -** Students will understand the details of elastic theory and allowable stress. **Shear and Bending in Beams -** Students will understand and use beam and column design equations. **Column Analysis and Design -** The student will understand the design process for columns. **Structural Connections -** The student will become familiar with bolted and welded connections. **Structure, Construction and Architecture –** The student will understand the different facets of the construction process through case study and the need to work as a team to complete the project on-time and on-budget.
CLASS TOPICS	**Structural Systems**
STUDENT OUTCOMES	**The Course Learning Outcomes support the achievement of the following CET Student Outcomes and TAC of ABET Criterion 9 requirements:** **Student Outcome A** - an ability to select and apply the knowledge, techniques, skills, and modern tools of their disciplines to broadly-defined engineering

technology activities
Course Learning Outcome – Apply the knowledge, techniques, skills, and modern tools to design structural systems
Student Outcome B - An ability to apply current construction knowledge, adapt emerging applications of mathematics, science, engineering and technology.
Course Learning Outcome - apply current construction knowledge into applications of mathematics, science, engineering and technology.
Student Outcome E,G: E-An ability to function effectively as a member or leader of a technical team; G - An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;
Course Learning Outcome – Ability to function in a team based atmosphere and communicate effectively in a technical environment as it pertains to structural systems.
Student Outcome F - an ability to identify, analyze, and solve broadly-defined engineering technology problems
Course Learning Outcome – Ability to analyize technical problems associated with certain structural systems and identify solutions.
Student Outcome H - An understanding of the need for and ability to engage in self-directed continuing professional development;
Course Learning Outcome – Understanding the importance of keeping abreast of new structural systems and technologies.
Student Outcome P – Applying basic technical concepts to the solution of construction problems involving structural systems.
Course Learning Outcome – Ability to use technical concepts to solve issues as they relate to structural systems.

ACADEMIC INTEGRITY

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code, go to http://www.njit.edu/academics/honorcode.php

MODIFICATION TO COURSE

The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course outline.

PREPARED BY Paul McCall
COURSE COODINATED BY Paul McCall

CLASS HOURS

Thursday **6:00 PM – 8:50 PM** FMH 405

OFFICE HOURS

Monday 5:30 PM - 6:00 PM FMH 405

Or by appointment: **(908) 541-5018** or **plm3@njit.edu (best method to reach me)**

COURSE OUTLINE

Lecture	Date	Sections	Topic	Assignment
1	September 5	Introductions, Course Syllabus Chapters 1	Introduction	
2	September 12	Chapter 2	Statics	
3	September 19	Chapter 3	Analysis of Structural Systems	
4	September 26	Chapter 4	Load Tracing	
5	October 3	Chapter 5	Strength of Materials	
6	October 10	Chapter 6	Cross-Sectional Properties	
7	October 17		**Review**	**Study**
8	**October 24**		**MID-TERM**	
9	October 31	Chapter 7	Shear and Bending in Simple Beams	
10	November 7	Chapter 8	Stresses in Beams	
11	November 14	Chapter 9	Column Analysis and Design	
12	November 21	Chapter 10	Structural Connections	
13	December 5	Chapter 11	Structure, Construction and Architecture	
14	December 12		**Reveiw**	**Study**
15	December 19		**FINAL EXAM**	

GRADING POLICY

Note: Grading Policy may be modified by Instructor for each Section in the Course)

Grading: The final grade in this course will be determined as follows:

▪ **HW**	**20%**
▪ **Attendance**	**10%**
▪ **Midterm Exams:**	**30%**
▪ **Final Exam:**	**40%**

A	**90-100**	**C**	**70-74**
B+	**85-89**	**D**	**50-69**
B	**80-84**	**F**	**0-49**
C+	**75-79**		

Note: This course needs to be passed with a grade of C or better. Cannot pass course if you having failing grades on midterm and final exam

STUDENT BEHAVIOR

- No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.
- Cellular phones must be turned off during the class hours – if you are expecting an emergency call, leave it on vibrate.
- No headphones can be worn in class.
- Unless the professor allows the use during lecture, laptops should be closed during lecture.
- Class time should be participative. You should try to be part of a discussion

COURSE POLICIES

- There will be No make-up EXAMS during the semester. In the event the Final Exam is not taken, under rare circumstances where the student has a legitimate reason for missing the final exam, a makeup exam will be administered. In any case the student must notify the Instructor that the exam will be missed and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc., clearly stating the date AND time of the mitigating problem.

COURSE EVALUATIONS

- Course evaluations and program surveys are important components of the educational process. Students in this course will complete course evaluation forms distributed during the last day of the course. Evaluation is anonymous.

STATEMENT ON ACCOMMODATIONS

- Reasonable accommodations are made on an individualized basis. It is the responsibility of persons with disabilities, however, to seek available assistance and make their needs known. The University has designated the Disability Resource Center as the campus coordinating office for the provision and delivery of services and reasonable accommodations that ensure the University's programs, services, and activities are accessible to students with disabilities. The Disability Resource Center is available to assist any student who has a qualified and documented disability. Please contact the Disability Resource Center at 480-965-1234 (Voice) 480-965-9000 (TTY) for additional information.

HOMEWORK - IMPORTANT

Homework is **due the week following the date they are assigned (see syllabus), and can be emailed. Homework will be graded and returned.** You can scan the homework as a pdf, save the homework as a .doc, or even take a picture of the homework as a .jpg file. Homework will not count if **they are turned in late**. Homework must be handed in individually.